Michigan Department of Community Health

MDCH

LabLink

Laboratory Information from the Michigan Department of Community Health - Bureau of Laboratories

Vol. 2 No. 3 April 1997

Meet the Health Risk Assessment Laboratory

Robert Welch, Section Chief
Cheryl Larivere, Laboratory Scientist

The Health Risk Assessment Laboratory would like to introduce itself in LabLink. The HRA Laboratory Section was transferred to the Bureau of Laboratories last October from the Bureau of Environmental and Occupational Health. It is now a section in the Division of Clinical Chemistry and Toxicology.

The laboratory was established in 1965 as part of the old Bureau of Laboratories and Epidemiological Services. Known as the Pesticide Section, the laboratory was one of the first laboratories in the country to analyze biological matrices, such as human tissues and body fluids for pesticides, heavy metals, pesticide metabolites and industrial chemicals. In fact, the HRA Laboratory was the first laboratory to detect PCB in human tissues. Although the laboratory previously analyzed water, soil, air and a variety of matrices pertaining to acute and chronic poisonings by pesticides, the type of analysis and services offered has become more specialized. Presently, the laboratory is analyzing only biological matrices, primarily human blood, urine, and human and wildlife tissue samples.

Human specimens are analyzed by the laboratory to support epidemiological studies conducted by the Bureau of Epidemiology. These studies are supported by numerous funding sources such as state, federal and educational institutions. The most significant has been the Polybrominated Biphenyls (PBB) Long Term Study that has been ongoing for twenty years. The fire retardant, PBB, was introduced into the food chain by inadvertant addtion to cattle feed. As a result, a considerable quantity of cattle, dairy and poultry products were destroyed. The PBB residue blood levels of farm families have been monitored for the last twenty years. The last round of blood specimens was collected in 1995. The Long Term Study has been a unique opportunity for epidemiologists to study a population exposed to a chemical, since the area of exposure is limited to Michigan. Results from the study continue to be evaluated toward detecting possible long term health effects.

The other major area of laboratory expertise, is the analysis of fish tissue for environmental contaminants. HRA provides the analytical support for the Michigan Department of Environmental Quality (MDEQ) Wildlife Monitoring and the Sports Fish Consumption Advisories. MDCH has the responsibility for sports fish consumption advisories based on the data from the fish samples analyzed by the HRA Laboratory.

HRA offers free analytical services to physicians. The lab will analyze patient's blood and mother's milk for the organochlorine pesticides, PCB and PBB. A kit is sent to the physician with all the instructions and materials, including a pre-addressed mailer.

ERRATUM
In the January issue of the LabLink (Vol.2, No.2), the following reference was omitted from the article "Hantavirus Update" by Patty Clark, MPH:

1. CDC Audioconference Seminar, "Hantavirus Pulmonary Syndrome: Clinical Update 1996", Ralph Bryan, MD.

We Have Moved Some Things Around

William Schneider, Supervisor,
Bacteriology Section

Testing services have been reorganized to accommodate new HIV testing and to consolidate serology testing into one laboratory.

The GenProbe chlamydial and gonorrheal probe testing, formerly done in Virology, are now being performed in the Bacteriology Laboratory. Any questions regarding these two tests should be directed to personnel at (517) 335-8133.

Fungal serologies as well as special requests for *Brucella*, *Francisella* and *Leptospira* serologies, formerly done in Bacteriology, are now being done in the Virology Laboratory. Any questions regarding receipt of specimens or progress of these tests should be directed to (517) 335-8102. Questions regarding interpretation of reports for these tests should be directed to Dr. Barbara Robinson-Dunn (517) 335-9641.

NEW LOOK FOR THE LABLINK

The look of the LabLink has changed. This is partially due to the new software program being used. Also, the set up is now being done by the technologically challenged editor. Please bear with us as we learn to deal with the new changes. Any comments or concerns, please call us at (517) 335-9763.

Confused about *E. coli* ?

William Schneider, Supervisor,
Bacteriology Section

We have received several inquiries asking us to explain our *E. coli* reports. Evidently, some confusion was created over the change in testing and reporting *E. coli* cultures, so we will try to articulate the changes a little more carefully.

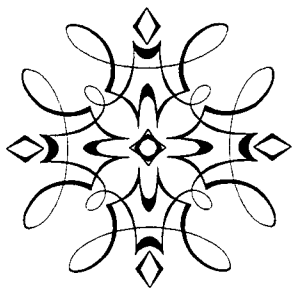
All *E. coli* isolates submitted to the Lansing laboratory are initially tested by DNA probe for production of Shiga-like toxin 1 (SLT1) and Shiga-like toxin 2 (SLT2). If the culture is found to be negative for both toxins, it will be reported "SLT1 and SLT2 Negative." No serotyping will be performed on these cultures.

If the culture is DNA probe positive for one or both toxins, it will be reported:

a.) "SLT1 Positive and SLT2 Negative"
b.) "SLT2 Positive and SLT1 Negative"
c.) "SLT1 and SLT2 Positive"

All toxin positive cultures will be serotyped. We will check for O157:H7, O111 and O126 at the Michigan Department of Community Health, Bacteriology Laboratory. Other toxin producing strains will be sent to the Centers for Disease Control and Prevention for complete serotyping.

Hopefully this resolves any confusion over MDCH *E. coli* reports. Testing for SLT1 and SLT2 are viewed as better indicators of *E. coli* pathogenicity and an improvement in this service. If you have any further questions about this testing, please do not hesitate to call us at 335-8133.



Bureau of Labs Participates in National Leadership Program

Frances Pouch Downes, Dr. P.H., Bureau of Laboratories

The Bureau of Laboratories is participating in a national program to actively explore and develop strategies to address critical issues facing public health laboratories. This program, entitled "*Partners for the Future: Exploring Roles of Public Health Laboratories*", is sponsored by the Association of State and Territorial Public Health Laboratory Directors (ASTPHLD) and the Centers for Disease Control and Prevention (CDC). This program will provide a forum for Michigan public health leaders to actively shape the future of the public health laboratory, specifically in services and functions. This program will encourage partnerships and discussions between key laboratory clients including representatives from the Michigan Department of Community Health program directors, local public health agencies, laboratory and medical professional organizations, clinical laboratory networks and legislators.

The objectives of the *Partners* program are to:

- build a common understanding of the challenges facing public health laboratories
- highlight the role and value of the public health laboratory in Michigan
- set an agenda for the public health laboratory's participation in strategic policy planning and development
- develop strategies for evolving laboratory responsibilities within an integrated health care system
- identify opportunities for client input in the public health laboratory's strategic plan

Over 43 states are participating in this program.

The "*Partners for the Future*" program includes two live satellite broadcasts to sites within each participating state originating from a studio located at CDC in Atlanta. The overall program consists of case studies, reading materials, and local site discussions. The satellite broadcast will feature prominent speakers; Dr. C. Everett Koop, Dr. Walter Dowdle and Dr. Bill Roper; and panel discussions among national experts and representatives from the Association of State and Territorial Health Officers, ASTPHLD, National Association of City and County Health Officers, Council of State and Territorial Epidemiologists and others. The team will also develop a White Paper which will be a valuable to guide the future plans and vision for public health laboratories in Michigan. A draft of the White Paper will be available in June.

Dr. Robert Martin, Bureau of Laboratories Chief, is acting as the *Partner* Program coordinator and I am acting as Program Facilitator. Heather Witkowski and Susan Shiflett are assisting with meeting facilitation.

HIV-1 Serology Testing Moving to Kent County Health Department

The Bureau of Laboratories is pursuing expansion of the regional public health system by transferring routine serum testing for HIV-1 antibodies to the Kent County Health Department Laboratory (KCHD). Both the screening EIA and the confirmatory Western Blot will be performed at the KCHD lab. The target date for the transfer of this testing is March 31, 1997.

The same reagents and testing procedures used at the MDCH Virology Section will be adapted in KCHD lab. Equivalently trained personnel will perform the testing.

"Transferring routine testing to Kent County will enable the MDCH Virology lab to offer more reference-level testing like viral load testing and OraSure. This also will promote the concept of regionalization of laboratory services in Michigan public health laboratories." said Dr. Robert Martin, Bureau of Laboratories Chief.

MDCH laboratory users will be notified by mail, included with HIV-1 serology results, as to the procedure to obtain new test request forms and mailing labels. If you do not receive this notification or have questions concerning specimen submission and reporting please contact Sam Davis, Quality Assurance Section Chief at (517)335-8074.

LABORATORY PARTICIPATION IN THE CHILDHOOD LEAD POISONING PREVENTION PROGRAM

Jeff Dupler, Chemistry and Toxicology Division, Blood Lead Section

The Centers for Disease Control and Prevention (CDC) reported that childhood lead poisoning is one of the most common childhood health problems in the United States today, and it is entirely preventable. The toxic effects of lead are particularly harmful to the developing nervous systems of young children and fetuses. Unfortunately many cases of poisoning go undetected because children suffering from lead poisoning often show no symptoms.

The Lead Laboratory works closely with MDCH's Childhood Lead Poisoning Prevention Program and Lead-Hazard Remediation Program, which has funding through the U.S. Department of Housing and Urban Development (HUD). The goal of the MDCH programs are to utilize an infrastructure involving local health departments, Medicaid services and advisory committees to focus on primary prevention activities.

The Lead Laboratory maintains licensing for the analysis of whole blood samples (capillary and venous) under the Clinical Laboratory Improvement Amendments (CLIA). Blood analysis is performed by graphite furnace atomic absorption spectroscopy. The lab is also Occupational Safety and Health Administration (OSHA) approved for occupational blood lead monitoring. While screening is shifting from the local health departments to managed care providers the lab continues to test 40,000 - 60,000 children a year.

In further support the of the MDCH Lead Hazard Remediation Program, the lab is accredited under the National Lead Laboratory Accreditation Program (NLLAP) for the lead analysis of dust wipes, paint chips, and soil. With the recent award of a HUD grant, in the amount of $4.9 million, 11 Michigan counties will be funded for lead remediation projects. The lab will follow specific protocols in flame atomic absorption analysis for the expected 20,000 environmental samples that will be collected over the next 2 years in these Michigan communities.

Questions regarding testing are welcome by telephone: (517)335-8244; or FAX: (517)335-9773.

Automatic Fax Reporting of Test Results Now Available

Dale Berry, Supervisor, Tb/Mycology Unit

The Bureau of Laboratory Services of the Michigan Department of Community Health (MDCH) is providing a new method of reporting which will enable you to receive reports of testing results much sooner. Hard copy reports, currently being sent by the United States Postal Service, can now be sent by AUTOMATIC FAX TRANSMISSION.

We are encouraging all agencies submitting clinical specimens to convert to this method for receiving these reports.

If you would like to switch to automatic FAX transmission of testing results, submit a request on your agency's letterhead, to MDCH containing the following information:

1. Your agency's FAX number to which the result reports are to be sent.

2. Your agency's telephone number for verbal communication, should transmission problems occur.

3. Two statements of understanding:

   a. That reports of results of **ALL MICROBIOLOGICAL TESTING** performed by MDCH for your agency will be sent by FAX transmission and that no hard copy result reports will be mailed.

   b. That the FAX number provided to MDCH is for a **SECURE FACSIMILE**, so that these reports can only be received and viewed by persons authorized to see them.

4. The signature of a person authorized to make this request.

This letter may be sent by FAX to MDCH using the number (517) 335-9631 or by mailing to:

Michigan Department of Community Health
Bureau of Laboratories
ATTN: Mike Huntzinger
3500 N. Martin Luther King, Jr. Blvd.
Lansing, MI 48909

As soon as the conversion is completed you will be notified and the reports of testing will begin to be sent by FAX transmission. Reports will be sent Monday through Friday according to the following scheduled reporting times.

7:30 AM
10:30 AM
12:30 PM
2:30 PM
4:30 PM

Testing results of specimens received at MDCH prior to the conversion to FAX reporting will continue to be sent as hard copy reports via the United States Postal Service.

If you have any further questions, contact Dale Berry, TB Unit Supervisor, at (517) 335-9637.

MDCH Kit Change Announced

A single universal transport medium for isolation of both viruses and chlamydia, is now being distributed by the Michigan Department of Community Health, Bureau of Laboratories. Unit 47, for Viral Isolation, and Unit 44, for Chlamydial Culture and Isolation will contain two milliliters (2ml) of a solution suitable for the transport of a variety of specimen types. The media better supports the viability of viruses and chlymidia than the two previously used media, and is less costly. The collection and submission of specimens for these examinations remains the same except that only one vial may be packaged in the aluminum mailer provided in the kits, instead of the previous two. Any questions about these changes can be directed to the Virology Section at (517) 335-8103, or to the Office of Quality Assurance at (517) 335-8074.

INFLUENZA SUMMARY UPDATE

Cal L. Frappier, Virology Section

Influenza activity continues to decline, both in Michigan and nationwide. For the week ending 3/1/97, Michigan reported only sporadic activity; nationwide, 15 states were still reporting widespread or regional activity. Pneumonia and Influenza (P&I) mortality levels fell below the epidemic threshold for only the second time in 11 weeks.

By the first of March, the World Health Organization (WHO) Collaborating Laboratories (including Michigan) had tested approximately 29,800 specimens, with 5,500 (19%) positive for influenza. Of those positives, 5,000 (89%) were influenza A, and 500 (11%) were influenza B. Respective figures for the Michigan Department of Community Health are as follows: 180 specimens tested, with 36 (20%) positive for influenza. Of those positives, 34 (94%) were influenza A, and 2 (6%) were influenza B. All subtyped influenza A are of the H3N2 variety. Nationally, influenza A predominated from October through the first week of February. Since that time, influenza B has been isolated more frequently, with three areas accounting for 80% of the activity: South Atlantic, Mountain, and Pacific regions.

Six of Michigan's isolates have been submitted to CDC for strain characterization studies: 4 have been completed as influenza A/Wuhan/359/95-like(H3N2), with 2 influenza B(Beijing-like) isolates still in progress.

An interesting note on the patients from whom influenza was isolated, only 3 individuals had received influenza vaccine, whereas 28 had not. Vaccination records were unavailable for the remaining 5 patients.

The composition of the influenza vaccine for the 1997-1998 season was announced at the WHO headquarters in Geneva, 2/19/97. The three components are to be: an A/Wuhan/359/95(H3N2)-like strain, an Bayern/7/95(H1N1)-like strain, and a B/Beijing/184/93-like strain. In this composition, the H1N1 component is the only one changed from the previous year.

BUREAU ANNOUNCES EID FELLOW

Barbara Robinson-Dunn, Ph.D.

The Bureau of Laboratories is pleased to announce that Gregory Jennings, an Emerging Infectious Diseases Research Fellow has chosen to billet at MDCH for the next two years. This fellowship program is designed for doctoral level scientists with an emphasis on research or development in infectious diseases and is jointly sponsored by the Association of State and Territorial Public Health Laboratory Directors and the Centers for Disease Control and Prevention. Greg came to MDCH via a doctoral program at Tulane University. His research involved the isolating, cloning and characterization of variability within a *Plasmodium* gene. This gene is currently under investigation as a potential vaccine candidate.

The fellowship program has many components including didactic and administrative training and research. He is midway through his rotation in Microbiology and will also rotate through Virology, and Quality Assurance. Research is an important component of the fellowship program and he is currently investigating enteric carriage of vancomycin-resistant enterococci, rifampin resistance in isolates of *Neisseria meningitidis* and molecular analysis of *Borrelia burgdorferi*. Greg can be contacted through the Division of Microbiology, (517)335-8067.

Cool Web Sites

Medscape (http://www.medscape.com) is for health professional and interested consumers, features thousands of free full-text, peer-reviewed articles, Medline and interactive quizzes. Continuing Education credit is often available.

The Scientist (http://www.the-scientist.library.upenn.edu) contains information about employment opportunities, grants and funding sources and symposia and meetings as well as news articles.

CDC (http://www.cdc.gov) This is the web page for the Centers for Disease Control and Prevention. After you reach this site, click on publications and you can get full text articles for the journal *Emerging Infectious Diseases*. An example of the type of article in this journal is *Fluoroquinolone Resistance in Neisseria gonorrhoeae.*

HIV-1 Viral Load Testing at MDCH

Steve Michalik, MA, Molecular Biology Section

Acquired immune deficiency syndrome (AIDS) is one of the most significant global health issues of our time. The World Health Organization estimates that by the year 2000, 40 million persons may be infected with human immunodeficiency virus (HIV) worldwide. HIV, the etiologic agent of AIDS, is a lentivirus, a subgroup of the retrovirus family. It is an RNA virus that infects CD4 receptor-bearing cells. After infection the virus integrates into the host cell genome as a DNA copy and exists in a proviral stage where it can remain latent for several years. The asymptomatic period is characterized by persistent low levels of viremia and a gradual depletion of CD4+ T-lymphocytes leading to advanced immunodeficiency, opportunistic infections, malignancies and ultimately death. During the asymptomatic period, levels of free virus in the blood remain relatively low; however, virus replication and clearance appear to be dynamic processes in which high rates of virus production and infection of CD4+ cells are balanced by equally high rates of virus clearance, death of infected cells and replenishment of CD4+ cells. The ability to accurately determine HIV-1 viral and infected cell burden is essential in predicting disease progression and assessing the efficacy of various therapeutic drug regimens and vaccines.

The Michigan Department of Community Health (MDCH), Bureau of Laboratories now offers HIV-1 viral load testing (Amplicor HIV-1 Monitor by Roche Diagnostics) to a limited population. The Amplicor HIV-1 Monitor test is a polymerase chain reaction amplification (PCR) system for the quantitative measurement of HIV viral RNA in plasma. This test is based on five major processes: specimen preparation, reverse transcription (RT) of target RNA to generate cDNA; PCR of target cDNA using HIV-1 specific complimentary primers; hybridization of the amplified products to oligonucleotide probes specific to the target(s); and detection of the probe-bound amplified products by colorimetric determination.

HIV-1 viral load testing will be made available to clients enrolled in the MDCH AIDS Drug Assistance Program (ADAP), Medicaid, State Medical Program and Childrens Special Health Care Services. MDCH is not able to accept specimens from direct payers or other third-party payers.

This test is for use with human plasma collected in the anticoagulant EDTA; serum is not acceptable. Whole blood must be kept at 2-25°C until the plasma can be separated. Plasma must be separated from whole blood within 6 hours of collection by centrifugation at 800-1600 x *g* for 20 minutes at room temperature. Plasma specimens must be shipped at 2-8°C. Ice packs are included in the shipping materials for this purpose. Samples will remain stable for up to 5 days at 2-8°C.

Viral load testing will not be performed if the specimen is improperly collected, processed, or shipped, or the test requisition form is incomplete. In addition, providers must submit labeled specimens in the plastic tubes provided. If the specimen label does not match the name/identifier on the test requisition form, testing will not be completed. See specimen collection directions (FD3) provided with shipping materials. The test is available only to HIV-1 infected persons enrolled in one of the programs above.

MDCH will provide shipping materials, test requisition forms and specimen collection and processing instructions in the Unit #3 kit. To request shipping materials contact the Laboratory Support Unit at (517) 335-9867 or fax your request for Unit #3 to (517) 335-9871 on a requisition for clinical containers form (F389).

Questions regarding HIV-1 viral load testing availability or technical information should be directed to Dr. Frances Pouch Downes at (517) 335-9603.

Antimicrobial Resistance Trends, Regions One (Reg1, Detroit Area) and Two to Twelve (Reg2-12 Outstate Michigan) Penicillin Resistant Study-site [1] Isolates of *Streptococcus pneumoniae* and Vancomycin Resistant Sterile-site[2] Isolates of *Enterococcus spp.* Michigan Sentinel Hospital Laboratory Survey, Third Quarter, 1995 through Fourth Quarter, 1996

Percent Resistant[3]

		1995 Quarters		1996 Quarters							
		Third + Fourth		First		Second		Third		Fourth	
Microorganism	Resistance Classification[3]	Rg 1	Rg 2-12	Rg 1	Rg 2-12	Rg 1	Rg 2-12	Rg 1	Rg 2-12	Rg 1	Rg 2-12
Str. pneumoniae	Moderate or High	20	14	20	19	23	20	34	20	26	14
Str. pneumoniae	High Level only	5	4	5	2	5	3	9	4	8	4
E. faecalis	Resistant	1	0	2	1	1	0	3	1	3	1
E. faecium	Resistant	33	7	37	13	48	9	35	5	44	9
Total Enterococcus	Resistant	7	1	9	3	10	2	9	3	10	2

[1] Study sites = blood, CSF, deep surgical wound, pleural fluid(fl), peritoneal fl, respiratory specimens or synovial fl.

[2] Sterile sites = blood, CSF, deep surgical wound, pleural fluid(fl), peritoneal fl, or synovial fl.

[3] NCCLS, Performance Standards for Antimicrobial Susceptibility Testing, Volume 14, Number

LabLink is published quarterly by the Michigan Department of Community Health, Bureau of Laboratories, to provide laboratory information to Michigan Health professionals and the public health community.

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